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What Macroeconomic Conditions Best Explain Southeast Asian Capital Flows?

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Abstract

The paper examines the capital flows of seven Southeast Asian emerging economies over the last decade and a half. It first evaluates the role of economic conditions within a country itself, including the country's domestic financial conditions and the openness of its financial markets to international capital flows. Then, the role of the counties' own domestic conditions is compared with regional influences and with the importance of macroeconomic conditions elsewhere, such as in Europe, and in the largest single recipient of the outflows, the United States. Key results include: (1) domestic capital market conditions are the best predictors (among the variables that we examine) of the capital flows of these countries; (2) capital market openness is of little use in predicting changes in capital flows; and, (3) while the macroeconomic conditions of the United States are strong predictors of subsequent GDP growth in the region, they are not, by themselves, good predictors of the region's capital flows.

JEL Classification: F32

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1 Introduction

Many Southeast Asian economies have yet to recover the investment levels that prevailed prior to the 1997 crisis. Nevertheless, their savings (including international reserve accumulations) have been high. The substantial surfeit of savings over investment has meant that the last decade has seen large net outflows of capital from Southeast Asia. Overall, for the last decade, Southeast Asian savings have financed investment elsewhere.

This paper focuses on some of the macroeconomic conditions that may be contributing to these net outflows. Specifically, the empirical links between Southeast Asian capital flows and macroeconomic conditions both within and outside of the region are examined. The paper first evaluates the role of economic conditions within a country itself, including the country's domestic financial conditions and the openness of its financial markets to international capital flows. Then, the role of the counties' own domestic conditions is compared with regional influences and with the importance of macroeconomic conditions elsewhere, such as in Europe, and in the largest single recipient of the outflows, the United States.

We separately explore the behavior of the various components of international capital flows. Specifically, we examine direct investment, portfolio equity flows, and other flows, in addition to the overall flows.[1,2] As might be expected, we find that each of the component flows appears to be related in a different way to the various conditions that we examine. Most notably, we find that direct investment stands out as being by far the least predictable of any of the flows. This is perhaps surprising, given its relative resilience during the Asian crisis and reputation as the most stable type of international capital flow.[3]

The paper's macroeconomic focus allows us to consider a number of arguments about the underlying causes of Asia's recent capital outflows. We first use the empirical comparisons to provide a fresh perspective on the argument that it has been the policies and conditions of the United States that have driven the outflows. In this view, the outflows are attributed to low U.S. saving rates, either as an outcome of sheer profligacy or as an

[1] In this study, we do not separately explore the behavior of official reserve transactions, which make up a large and important portion of the total flows in several of the Southeast Asian economies.

[2] The category "other" refers mainly to trade credits, loans, and deposits.

[3] Studies documenting the relative stability of foreign direct investment include: Chuhan, Perez-Quiros, and Popper (1996), Frankel and Rose (1996), Lipsey (2001), Sula and Willett (2007), and Sarno and Taylor (1999).

outcome of substantial improvements in the prospects for U.S. growth.[4] As it turns out, the comparisons do not support this argument: once domestic and regional conditions are taken into account, changes in U.S. macroeconomic factors by themselves can explain only a small part of the behavior of the region's capital flows.

Next we use the macroeconomic assessments to provide a framework for evaluating one of the potential explanations of the larger puzzle of reverse capital flows – that is, why capital is sent persistently from emerging economies to richer ones instead of the reverse. Where capital is scarce, it should earn a high return. Rich economies are more capital abundant than are emerging ones, so capital should earn a lower return in rich economies than in emerging ones. At least by some measures, this appears to be the case: IMF estimates of the return to capital for the decade from 1994 to 2003 were less than 8 percent in the United Kingdom, just under 10 percent in the United States, and less than 8 percent in the G-7 economies as a whole; over the same period, the estimated return was about 15 percent in emerging Asia, about 13 percent in Latin America, and about 11 percent in other emerging markets.[5] One expects capital to flow to where its return is highest.[6] So, on the face of it, it is puzzling why there is now so much sustained lending from emerging economies, such as many of those in Southeast Asia, to richer ones, such as the United States and the United Kingdom.

One intriguing answer to the 'reverse' capital flows puzzle relies on the relative efficiency of financial markets. This answer has been formalized in distinct ways by Caballero, Farhi, and Gourinchas (2006) and by Mendoza, Quadrini, and Rios-Rull (2006).[7] Essentially, these papers suggest that when emerging economies lack sufficient financial infrastructure to match borrowers and lenders efficiently in their own countries, savers in those

[4]Obstfeld and Rogoff (2004), and Roubini and Setser (2004), emphasize low U.S. saving. Engel and Rogers (2006) examine the implications of high U.S. growth prospects relative to the rest of the world. Bems *et al.* (2006) compare the role of U.S. productivity improvements with changes in U.S macroeconomic policies.

[5]See IMF (2004), but note that the estimates are controversial: Caselli and Feyrer (forthcoming) roughly equate marginal products across the countries. Of course, even with roughly equal marginal products, the net flows from emerging to mature economies remain puzzling, if somewhat less so.

[6]Of course, as noted by Lucas (1990), other factors that are complementary to capital also affect its return. Acemoglu, Johnson, and Robinson (2001, 2002), and Alfaro, Kalemli-Ozcan, and Volosovych (2005), among many others, emphasize the role of institutions.

[7]The two papers differ in a number of ways; but for our purposes the differences that are most interesting are: (1) Caballero, et. al. also emphasize differences in growth, and (2) Mendoza et. al. emphasize capital market liberalization. We also note that, like Dooley, Folkerts-Landau, and Garber (2005), Caballero, et. al. also aim to provide an explanation of recent, relatively low interest rates ("Greenspan's Conundrum").

countries send their assets abroad despite high domestic returns to capital. International differences in domestic financial access (along with growth, in the Caballero, et. al. paper) explain the direction of net capital flows, and countries like the United States and the United Kingdom implicitly export financial services. In this regard, the approach contrasts with other explanations that rely on an absence of fundamental investment opportunities in the emerging markets.[8]

Our empirical framework makes it possible to overlay measures of domestic financial access on the macroeconomic backdrop.[9] Thus, we can explore whether the financial access approach has empirical traction for Southeast Asian emerging economies. Indeed, our preliminary results seem to indicate that international differences in financial market access are important in explaining the behavior of Southeast Asian capital flows.[10] This suggests that as Southeast Asian financial markets deepen, more of their savings will be retained, and we will see renewed investment within the region.

2 Data

Implementation of this approach requires a broad range of international data, including data on capital flows, macroeconomic conditions, and financial market conditions. We use annual data from 1990 through 2004 for Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore, and Thailand.[11] Capital flow data, including direct investment, portfolio investment, other investment (which includes trade credits, loans, and other assets and liabilities), and the financial account are taken from the IMF's Balance of Pay-

[8]Such explanations also address the recent low real interest rates, pointing as their source to developments in the emerging economies' (including those in Southeast Asia) rates of investment and saving. See, for example, Bernanke's (2005) comments on the global saving 'glut.'

[9]We also are interested in how flows have responded to capital market openness. This latter question is part of the broader attempt to understand how the use of capital controls compares with policies to improve domestic financial institutions. In this regard, our work builds on that of Campion and Neumann (2004), who examine the composition of inflows in Latin America, linking the composition to capital controls. While they do not control for output, they find that capital controls affect the composition, but not the volume of flows, implying that the various categories are substitutes, rather than complements. Neumann, Penl, and Tanku (2006) have used panel approaches to explore the links between the volatility of flows and financial liberalization. See also Ito (2006), Fernandez-Arias and Haussman, 2001.

[10]As will be seen below, our initial, empirical measures of access align most closely with the Caballero, et al. approach. However, we plan to expand the measures in future work.

[11]This list included all of the emerging market economies represented in the Executives' Meeting of East Asia-Pacific Central Banks (EMEAP), except China.

ments Statistics.[12] The compositional data is particularly important for this study because at least some of the different theoretical approaches suggest distinctive implications for the various categories of financial flows. For example, the financial efficiency approaches of Caballero, Farhi, and Gourinchas (2006), and of Mendoza, Quadrini, and Rios-Rull (2006) might be interpreted as suggesting that international portfolio flows would move from emerging economies with little domestic financial development or stability to the mature economies; while foreign direct investment might flow in the opposite direction. In contrast, the foreign direct investment flows to the emerging markets are somewhat more difficult to reconcile with either the "savings glut" explanation, which relies on low investment opportunities in Asia, or with the explanations that rely solely on U.S. factors, such as high U.S. growth or expansionary U.S. fiscal policy.

The data on net inflows are illustrated in Figure 1. As can be seen, total inflows in most of the economies fell substantially during the Asian crisis; and, where they fell precipitously, they have not yet returned to their pre-crisis levels. Both portfolio investment flows and the category of other investment flows declined sharply around the same time in Indonesia, Korea, the Philippines, and Thailand. However, only Indonesia and Thailand saw the same precipitous declines in direct investment. In the other economies the decline in direct investment was either more attenuated or asynchronous with the timing of the crisis. Notably, direct investment continued to flow into Korea, the Philippines, and Thailand during the crisis.

The data on macroeconomic conditions are taken primarily from the World Bank's *World Development Indicators*; and, they include real GDP, the unemployment rate, consumer and wholesale price indices, gross fixed capital formation, household consumption, net exports, the deposit rate, an interest rate spread, and a broad money indicator. The real effective exchange rate indices are taken from the Bank for International Settlements. Data on the level of financial market capitalization are taken from Beck, Demirgüç-Kunt

[12]Lane and Milesi-Ferretti have compiled data on the size and composition of external assets and liabilities of over 100 countries for more than three decades, through 2004. We could alternatively have constructed capital flows using their data, which includes valuation effects. Inclusion of the valuation effects changes the interpretation of the flows: with valuation effects, the measured flows include what we see as "passive" paper gains and losses. While inclusion of the passive flows is important in many applications, it would be distracting here because of the variability of the valuation effect. Essentially, the valuation gains and losses are so large that they swamp the behavior of the underlying flows, rendering the flows nearly as unpredictable as the exchange rate.

and Levine (2006). While these authors have collected a wider range of indicators of the activity and efficiency of financial institutions, we begin with their data on equity and bond market capitalization.[13] Finally, we use (initially) a *de facto* measure of financial market openness, the sum of total capital inflows and outflows relative to GDP.[14]

Figure 2 shows the recent movements in financial market capitalization, including the capitalization of both equity markets and of private and public bond markets and in the *de facto* measure of international financial openness. One typically expects financial market maturity to reflect institutional changes that develop only slowly over time, but the ability to use financial markets also fluctuates with conditions that change over just a few years. To the extent that a significant fall in bond and equity market capitalization reflects diminished available opportunities for financial intermediation, it may be suggestive of a diminished functioning of the financial markets.[15] As shown in the figure, market capitalization moved only slowly over time in Hong Kong, Indonesia, Singapore, and Thailand. However, in Malaysia and the Philippines, market capitalization drops substantially around the time of the Asian crisis. *De facto* capital market openness, also shown in the figure, has risen, overall, in all the economies except in Hong Kong, where it began much higher than elsewhere and has remained so, and in Indonesia, where it spiked and subsequently deteriorated after 1997.[16] By 2004, Indonesia had the lowest level of *de facto* capital market openness in the set of economies that we examine.

3 Estimation

3.1 Econometric Approach

Capital flows and their determinants have been examined in a variety of settings, mostly using panel approaches. While the panel approach is useful, it brings with it two important

[13] We recognize that these measures combine financial market maturity with changes surges in bond and equity valuations. In future work, we plan to use other financial development measures as well.

[14] This capital market openness measure is the analogue of the traditional trade openness measure: the sum of imports plus exports relative to GDP. To explore the robustness of our results, we also plan to measure financial market openness using the the Chinn and Ito (2002) openness index, which takes the first principal component of four IMF indicators of financial market openness.

[15] The capitalization measure and its interpretation is perhaps most consistent with Caballero, Farhi, and Gourinchas (2006) idea of "episodes when it cannot generate enough reliable savings instruments."

[16] For Indonesia, the decline roughly coincides with a sharp decline indicated by Chinn and Ito's principal components-based measure, though their measure does not indicate the earlier rise.

drawbacks. First, it implicitly constrains the dynamic interactions among the variables of interest. Second it typically conditions on only a relatively small number of variables at a time. In this paper, we use a data-rich approach that enables us to take some steps toward addressing both these limitations.

Specifically, we use factor-augmented vector autoregressions (FAVARs). Like a vector autoregression, a FAVAR allows for very general dynamic interactions among variables. At the same time, the FAVAR approach addresses a common criticism of vector autoregressions – that it includes too few variables, so it is left with omitted variable bias. The FAVAR approach adds to a vector autoregression the ability to address the omitted variable problem by conditioning on the information contained in a large number of variables. As we will see, a FAVAR can condition on a great deal of information while retaining the vector autoregression's blend of variable parsimony and dynamic generality.[17] We will begin with a simple vector autoregression, then we will incorporate additional invormation to build the FAVAR.

3.2 Benchmark Vector Autoregression
Financial Market Capitalization and Openness

Key among the dynamic interactions that we can allow for is the interaction between capital flows and growth.[18] So, we start with measures of capital flows and GDP growth for each country. To these variables we add the measures of financial market capitalization and international openness; and, we construct a 4×1 vector, $y_{i,k,t}$, of variables for each country, i, and time period, t. For each country, the first element in the vector, $f_{i,k,t}$, is the

[17]The FAVAR approach was pioneered by Stock and Watson (2002), who initially demonstrated its usefulness in forecasting. Its application to monetary policy issues was illustrated by Bernanke et. al. We follow Smith and Zoega (2005) in applying the approach to international panel data. The technique has also been applied recently by Lagana and Mountford (2005) to examine U.K. monetary policy, to a study of the term structure by Mönch (2005).

[18]Growth may be linked to capital flows in at least three important ways. First, emerging market capital flows have been shown to be cyclical. See Neumeyer and Perri (2005), for example. While the life cycle model predicts that capital inflows would be counter-cyclical, Smith and Valderamma (2006) show that financial frictions imply that the flows are procyclical (and correlated with investment). In their model, each type of capital flow varies differently with the business cycle. Thus, the composition of flows is linked to the business cycle. Second, part of the Washington consensus was the idea that capital account liberalization and capital market development would lead to stronger growth in developing and emerging markets. Third, the reverse has also been suggested: stronger growth prospects – and stronger growth – attract capital. This third interaction is potentially amplified if stronger growth also leads to financial market development and openness.

measure of capital flows as a fraction of GDP, where the subscript k refers either to total flows or to the type of flow, whether direct investment, portfolio flows, other investment.[19] The second element is the reported growth of real per capita gross domestic product, $g_{i,t}$. The third variable is the change in financial market capitalization, $m_{i,t}$. Finally, we include the change in *de facto* measure of capital market openness, $\omega_{i,t}$, the sum of total inflows and outflows relative to GDP. So, our vector of variables is: $y_{i,k,t} = (f_{i,k,t}, g_{i,t}, m_{i,t}, \omega_{i,t})'$. A range of standard tests for unit roots in these variables generally supports their treatment as stationary in the estimation that follows.[20]

For each capital flow type, we stack the seven individual country vectors, $y_{i,k,t}$, into a single vector, $y_{k,t}$. To provide an initial benchmark, we examine a very simple reduced-form vector autoregression, in which the variables depend only on lagged values, as follows:

$$y_{k,t} = \Gamma(L) y_{k,t-1} + \nu_{k,t}, \tag{1}$$

where $\Gamma(L) = I_7 \otimes \gamma(L)$. While this form of $\Gamma(L)$ restricts the dynamic relationships between these variables to be the same across countries, it enables us to begin to describe some of the overall patterns of the comovements of these variables. We can examine, for example, whether financial market capitalization or capital market openness Granger causes capital flows.

Table 1 summarizes the Granger causality tests from each four-variable vector autoregression with annual data. The top panel gives the results using a single lag; and, the bottom panel gives the results with two lags.[21] The first column gives the tests for whether financial market capitalization Granger causes any of the other variables. As shown in both the top and bottom panels, a country's financial market capitalization Granger causes both its total capital flows and the category of other investment flows. It also strongly Granger causes GDP growth, as may be seen in all four specifications. In contrast, the *de facto* change in a country's capital market openness, given in the second column, does not

[19] Because of data limitations, we use only net flows.

[20] These tests include the Levin, Lin and Chu test, and the Breitung test, which both assume a common unit root process; and the Im, Pesaran, and Shin tests, which allows for individual unit root processes. The tests are available from the authors.

[21] In this baseline estimation – and in most of the specifications estimated below – the Schwarz and Hannan-Quinn criteria suggest that a single lag is most appropriate. So, we begin with the results using a lag length of one; but, we also report the results for two lags .

appear to matter to any of its flows, nor is its significance in the growth equations particularly high. Overall, financial market capitalization seems to be much more important than *de facto* capital market openness in these benchmark vector autoregressions.

3.3 Regional Effects

In this section, we empirically incorporate the notion that a country's capital flows can also depend on the regional macroeconomic conditions outside its borders. There are many possible (and imperfect) indicators of the underlying macroeconomic conditions, and it is not always clear which indicators are most important. The FAVAR allows us to use many observable indicators to capture the influence of a key, albeit potentially unobservable macroeconomic factor, which we call r_t.[22] We can write:

$$\begin{pmatrix} r_t \\ y_{k,t} \end{pmatrix} = \Phi(L) \begin{pmatrix} r_{t-1} \\ y_{k,t-1} \end{pmatrix} + \eta_{k,t}, \tag{2}$$

where $\Phi(L)$ is a conformable, finite order lag polynomial, and η_t is mean zero with covariance matrix Q. While we cannot directly estimate equation 2 when the underlying regional macroeconomic conditions are not directly observable, we can make inferences using the observable variables that they influence, which we will denote with an $N \times 1$ vector, x_t. We can express the observable variables in terms of their links to both the unobservable conditions and the variables that interest us – capital flows, growth, and financial market capitalization and openness:

$$x_t = \Lambda_r r_t + \Lambda_y y_t + e_t \tag{3}$$

where Λ_r is $N \times 1$ and Λ_y is $N \times 4$; and e_t is a vector of normal, uncorrelated errors.[23]

The key benefit of using this approach is that it enables us to condition on the infor-

[22] There may be more than one factor underlying the panel VAR. In general, the number of factors that captures the common variation in a panel of data is unknown. We initially use a single factor, but we add an additional factor below. Here, r_t (like y_t) is constructed by stacking vectors of country-indexed variables, $r_{i,t}$. Each of the country-indexed "regional" factors is defined to exclude the portion of the regional effect attributable to the individual country itself. In this regard, the the regional factor is allowed to vary across the economies within the region.

[23] More generally, there may be several factors – say K factors – n which case Λ_r is an $N \times K$ matrix; and, there may be some correlation among the errors e_t.

mation available in a large set of variables. Here, we let x_t include measures of a broad range of macroeconomic indicators for the economies within the region. Specifically, in addition to the benchmark variables – the component capital flows, and financial market capitalization and openness – we also include changes in: consumer and wholesale price indices, gross fixed capital formation, household final consumption expenditure, a domestic interest rate, a broad money aggregate, and net exports of goods and services. The regional variable is constructed in such a way that it differs slightly across countries: for each country, we exclude that country's own indicators from the regional information set. This allows us to more clearly distinguish regional influences *per se* from the effects of domestic conditions. We estimate equations 2 and 3 with a two step procedure that closely follows Stock and Watson (2002). The first step in the procedure is to summarize the important variation contained in the set of observable indicator variables using the principal component of x_t. The second step is to estimate the FAVAR, which is the VAR augmented with the principal components.[24]

The results of the estimation are reported in Table 2. The regional factor seems to matter very little. As shown in the first column, the regional factor by itself Granger causes neither flows nor growth. As shown in the second column, most of the results for financial market capitalization and openness are very similar to the baseline vector autoregression. Changes in the level of financial market capitalization continue to Granger cause total flows and (somewhat less strikingly) the category of other flows. They continue to Granger cause GDP growth in all of the specifications. Finally, *de facto* capital market openness, shown in the third column remains less important both for capital flows and for growth overall. These results suggest that once the country's own growth and capital market conditions are taken into account, regional developments outside the country are not particularly important – either for capital flows or for growth.

[24]The FAVAR could be estimated instead using a single-step maximum-likelihood method, one that estimates simultaneously the factor and the dynamics in the VAR. However, the two step approach yields the most convincing results in Bernanke et. al. (2005); and, as Mönch (2005) notes, the single-step maximum-likelihood approach becomes infeasible when the number of informational variables becomes large. The beauty of the FAVAR approach is that a small number of conceptual factors may be represented empirically by a very large set of observable economic indicators. So, it would be a pity to restrict the number of variables for the sake of a feasible single step estimation. Here, the initially modest number of variables is multiplied both by the number of economies and by the number of lags.

3.4 The U.S. Role

To examine the argument that it has been the macroeconomic conditions of the United States that have driven the behavior of the capital flows in the region, we add a U.S. factor and corresponding U.S. data to equations 2 and 3. So, in equation 3, we add U.S. observations of the same informational variables we used in constructing the regional factor: the benchmark variables (GDP per capita, and financial market flows, capitalization, and openness), and consumer and wholesale price indices, gross fixed capital formation, household final consumption expenditure, a domestic interest rate (here the federal funds rate), a broad money aggregate, and net exports of goods and services. This gives us a FAVAR with two factors, one representing the macroeconomic conditions within the region and the other representing the macroeconomic conditions in the United States.

The results of this estimation are given in Table 3. U.S. conditions do not seem to be direct determinants of capital flow behavior, but they do seem matter for growth. As shown in the first column, in no case do U.S. conditions Granger cause capital flows; but, they do Granger cause growth in all of the specifications. The remaining results are altered only slightly be the inclusion of the U.S factor. Regional conditions, shown in column 2, still seem to matter very little. Market capitalization, shown in column 3, still Granger causes total investment, other investment, and growth. *De facto* openness, shown in the final column, does seem to have somewhat stronger significance for growth than it did either in the benchmark vector autoregression or in the single region FAVAR; however, its additional significance disappears when the lag length extends to two years. Overall, while U.S. macroeconomic conditions seem to matter for growth in the region, U.S. conditions on their own have played no obvious role in the behavior of Southeast Asian capital flows over the period.

3.5 Domestic Financial Market Access and Foreign Growth

We now turn to our empirical interpretation of Caballero, Farhi, and Gourinchas (2006), more specifically. The essential idea is that the emerging economies are implicitly importing financial services, and they import them from the fastest growing of the financially advanced countries. If correct, this notion implies first that as long as a country's financial market remains in some way difficult to access, its savings will continue to flow

abroad despite the existence of potentially attractive investment opportunities at home. The explanation also requires moderate growth in at least one of the foreign economies with well-developed and relatively stable financial markets. While the discussion of capital outflows often focuses on the role of the United States, Europe could serve as a capital recipient as well if its growth is high enough. For our empirical implementation, we return to the benchmark vector autoregresson – which includes financial market capitalization – and augment it with observations of both U.S. and European growth. Then, we examine whether changes in financial market capitalization at home combined with growth outside the region together can explain the behavior of international capital flows in the Southeast Asian economies. [25]

The results of this estimation are shown in Table 4. The top panel once again gives the results using a single lag, while the bottom panel gives the results using two lags. As shown in the first column, we can reject the hypothesis that domestic financial market capitalization and foreign growth together are unimportant for financial investment overall and for the category of other investment. By itself, this lends support to the ideas formalized by Caballero, Farhi, and Gourinchas. At the same time, it should be noted that the support comes most clearly through the statistical importance of financial market capitalization, shown in the final column, rather than through the role of U.S. and European growth, whose statistical significance – shown in the second and third columns – is less striking. There is only weak evidence that U.S. and European growth matter for total flows and for the category of other flows, though for total flows, European growth, if anything, matters more than does U.S. growth. For the growth equations, the results are consistent with the importance of U.S. macroeconomic conditions in the FAVAR of Table 3: U.S. growth strongly Granger causes growth in Southeast Asia's emerging economies. European growth, in contrast, does not. Overall, these results confirm the results of both the benchmark regressions and the FAVARs. Namely, financial market capitalization is important in explaining overall international financial flows in the Southeast Asian economies that we examine. At the same time, financial market capitalization matters little for either foreign direct investment or for portfolio flows.

[25]We treat lags of U.S. and European growth as exogenous to the Southeast Asian variables; this treatment is implied by the assumption that each of the economies that we examine is small relative to Europe and the United States.

4 Conclusions

What can account for the recent behavior of the capital flows of Southeast Asia's emerging economies? Can changes in financial market capitalization and international financial openness account for much? How closely linked are the capital flows in each country to macroeconomic developments among the other emerging market economies within the region? Are the economies' capital flows tied to the macroeconomic conditions in the major industrialized countries outside Asia? How important has been the role of the United States?

This paper has provided some tentative answers to these questions. Our preliminary results suggest that what matters most clearly to the empirical behavior of these economies' capital flows are their domestic financial market conditions. Domestic financial market capitalization is consistently the best predictor that we examine for both overall flows and for the category of other investment. The *de facto* international openness of domestic financial markets, in contrast, seems to matter very little to any of the capital flows. Its lack of importance arises despite a consistently observed link between financial openness and subsequent *growth*. As far as the regional links go, our preliminary results suggest that they are not important: whether in predicting capital flows or the growth of an individual economy, the overall macroeconomic conditions of the other emerging market economies in the region are simply not useful at all. European growth, likewise, matters little. Finally, the role of the the United States has been limited: while our preliminary results do seem to indicate that U.S. macroeconomic conditions help explain growth in the region's emerging economies (better, in fact, than do the macroeconomic conditions within the region itself), U.S. macroeconomic conditions seem to play little or no role in shaping the behavior of any of the major categories of capital flows.

Table 1: Baseline Vector Autoregression Granger Causality Tests

	Excluded Regressors	
	Market Capitalization	*De Facto Openness*
Lags: One Year		
Total Investment	0.0000	0.2257
Per Capita GDP Growth	0.0000	0.1181
Direct Investment	0.5590	0.4336
Per Capita GDP Growth	0.0000	0.0800
Portfolio Investment	0.9235	0.2676
Per Capita GDP Growth	0.0000	0.0929
Other Investment	0.0489	0.1745
Per Capita GDP Growth	0.0000	0.0817
Lags: Two Years		
Total Investment	0.0003	0.3289
Per Capita GDP Growth	0.0001	0.4373
Direct Investment	0.4300	0.2008
Per Capita GDP Growth	0.0001	0.2271
Portfolio Investment	0.9613	0.7767
Per Capita GDP Growth	0.0001	0.3179
Other Investment	0.0188	0.7446
Per Capita GDP Growth	0.0001	0.3334

Notes: The entries show the p-values for tests that lags of the regressor do not enter the reduced form equation for the row variable in the baseline vector autoregression of equation 1.

Table 2: FAVAR Granger Causality Tests – One Region

	Excluded Regressors		
	Regional Conditions	*Market Capitalization*	*De Facto Openness*
Lags: One Year			
Total Investment	0.5175	0.0000	0.2614
Per Capita GDP Growth	0.6973	0.0000	0.1340
Direct Investment	0.8767	0.5670	0.4554
Per Capita GDP Growth	0.6329	0.0000	0.0986
Portfolio Investment	0.2898	0.9685	0.2173
Per Capita GDP Growth	0.5964	0.0000	0.1111
Other Investment	0.1793	0.0573	0.1265
Per Capita GDP Growth	0.6539	0.0000	0.0971
Lags: Two Years			
Total Investment	0.2673	0.0001	0.3327
Per Capita GDP Growth	0.3343	0.0001	0.4004
Direct Investment	0.9857	0.4594	0.2131
Per Capita GDP Growth	0.3449	0.0001	0.1914
Portfolio Investment	0.7418	0.9721	0.7438
Per Capita GDP Growth	0.3802	0.0000	0.2733
Other Investment	0.4623	0.0149	0.7743
Per Capita GDP Growth	0.4079	0.0000	0.2782

Notes: The entries show the p-values for tests that lags of the regressor do not enter the reduced form equation for the row variable in the FAVAR (equations 2 and 3) that includes the baseline variables and the regional macroeconomic variables.

Table 3: FAVAR Granger Causality Tests – Two Regions

	Excluded Regressors			
	U.S. Conditions	*Regional Conditions*	*Market Capitalization*	*De Facto Openness*
Lags: One Year				
Total Investment	0.7551	0.5052	0.0000	0.2471
Per Capita GDP Growth	0.0095	0.5425	0.0000	0.0384
Direct Investment	0.6748	0.9053	0.5333	0.5110
Per Capita GDP Growth	0.0070	0.4721	0.0000	0.0305
Portfolio Investment	0.9990	0.2938	0.9691	0.2321
Per Capita GDP Growth	0.0042	0.4679	0.0000	0.0239
Other Investment	0.3889	0.1961	0.0462	0.0934
Per Capita GDP Growth	0.0042	0.4679	0.0000	0.0239
Lags: Two Years				
Total Investment	0.7238	0.3216	0.0001	0.3391
Per Capita GDP Growth	0.0965	0.3077	0.0001	0.3827
Direct Investment	0.9323	0.9794	0.4480	0.2407
Per Capita GDP Growth	0.0853	0.3233	0.0002	0.1452
Portfolio Investment	0.4465	0.7254	0.8948	0.7309
Per Capita GDP Growth	0.0844	0.4403	0.0001	0.2087
Other Investment	0.4220	0.4286	0.0125	0.6980
Per Capita GDP Growth	0.0714	0.4459	0.0001	0.2304

Notes: The entries show the p-values for tests that lags of the regressor do not enter the reduced form equation for the row variable in the FAVAR that includes the baseline variables and both regional and U.S. macroeconomic variables.

Table 4: Vector Autoregression Exclusion Restrictions

	Excluded Regressors			
	Combined Growth and Capitalization	*U.S. Growth*	*European Growth*	*Market Capitalization*
Lags: One Year				
Total Investment	0.0000	0.1479	0.0515	0.0000
Per Capita GDP Growth	0.0000	0.0044	0.5697	0.0000
Direct Investment	0.7967	0.4310	0.6376	0.4292
Per Capita GDP Growth	0.0000	0.0094	0.6288	0.0000
Portfolio Investment	0.9246	0.8574	0.5623	0.8144
Per Capita GDP Growth	0.0000	0.0082	0.5487	0.0000
Other Investment	0.0085	0.0304	0.0308	0.0045
Per Capita GDP Growth	0.0000	0.0021	0.3412	0.0000
Lags: Two Years				
Total Investment	0.0003	0.0686	0.0298	0.0000
Per Capita GDP Growth	0.0000	0.0001	0.0797	0.0000
Direct Investment	0.7887	0.8406	0.6725	0.3390
Per Capita GDP Growth	0.0000	0.0003	0.1199	0.0000
Portfolio Investment	0.8607	0.9610	0.4392	0.9762
Per Capita GDP Growth	0.0000	0.0002	0.0992	0.0000
Other Investment	0.0767	0.1825	0.3933	0.0107
Per Capita GDP Growth	0.0000	0.0001	0.1069	0.0000

Notes: The entries show the p-values for tests that lags of the regressor(s) do not enter the reduced form equation for the row variable in the vector autoregression that includes the baseline variables and U.S. and European growth.

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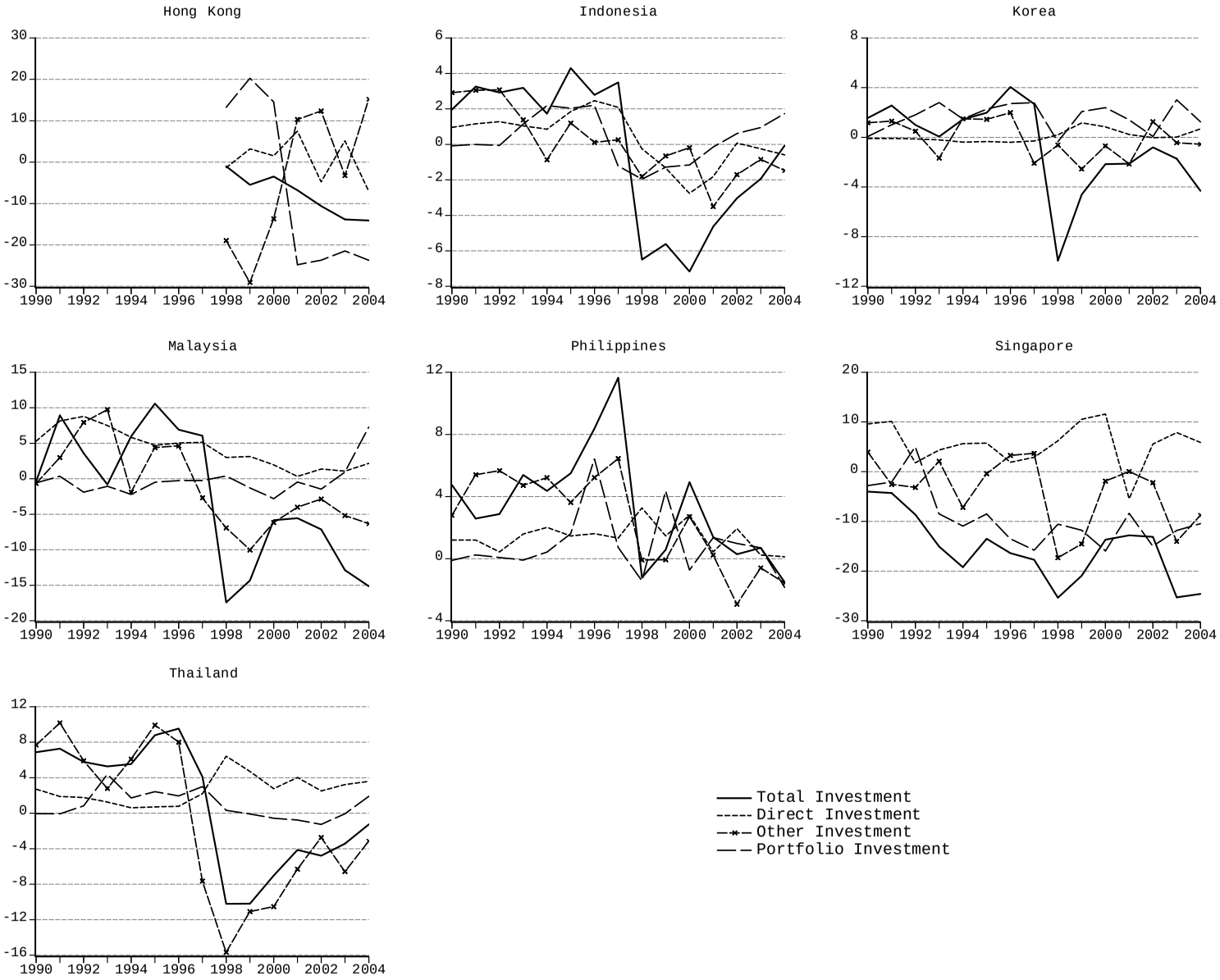

Figure 1: Net Capital Inflows

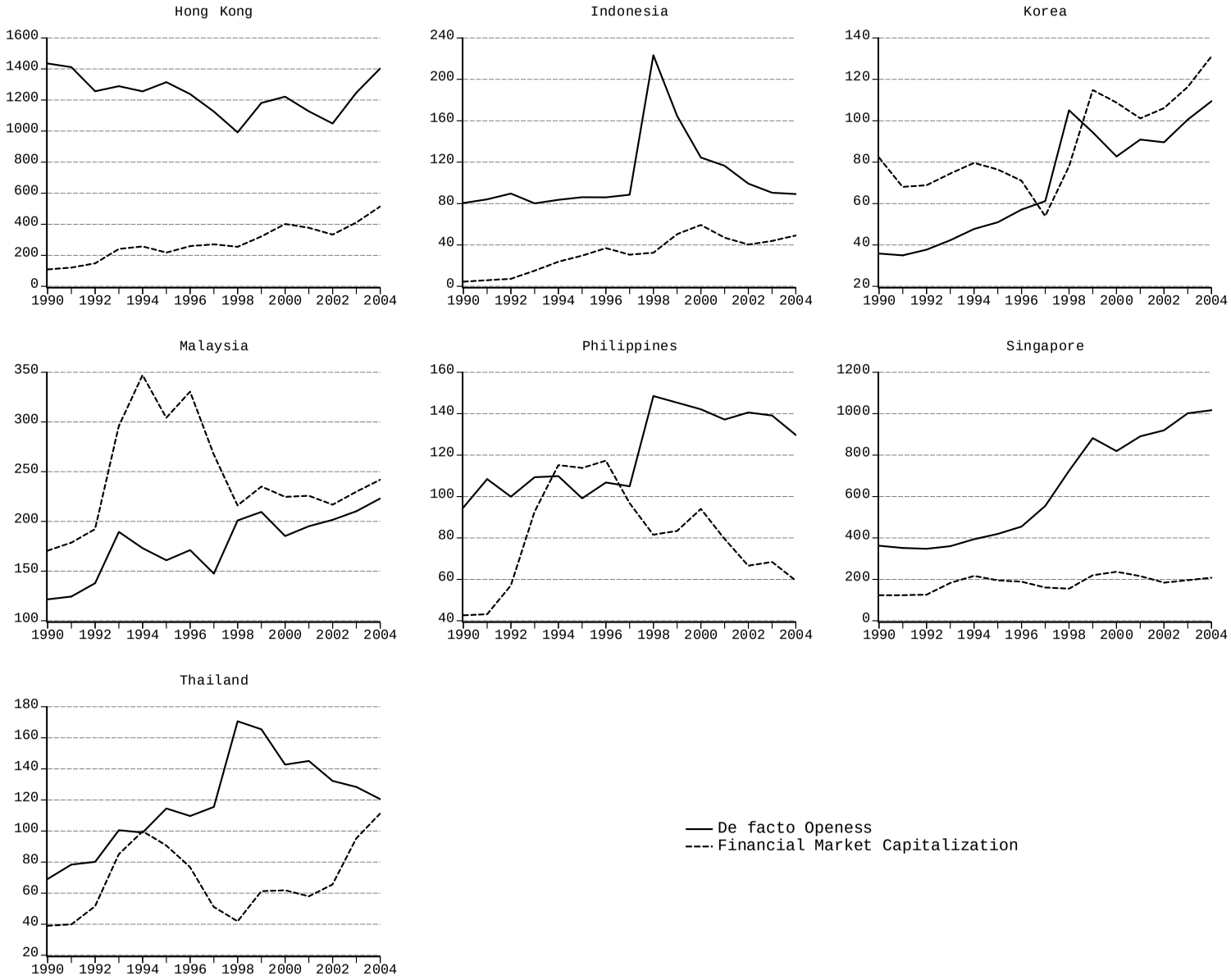

Figure 2: Capitalization and Openness

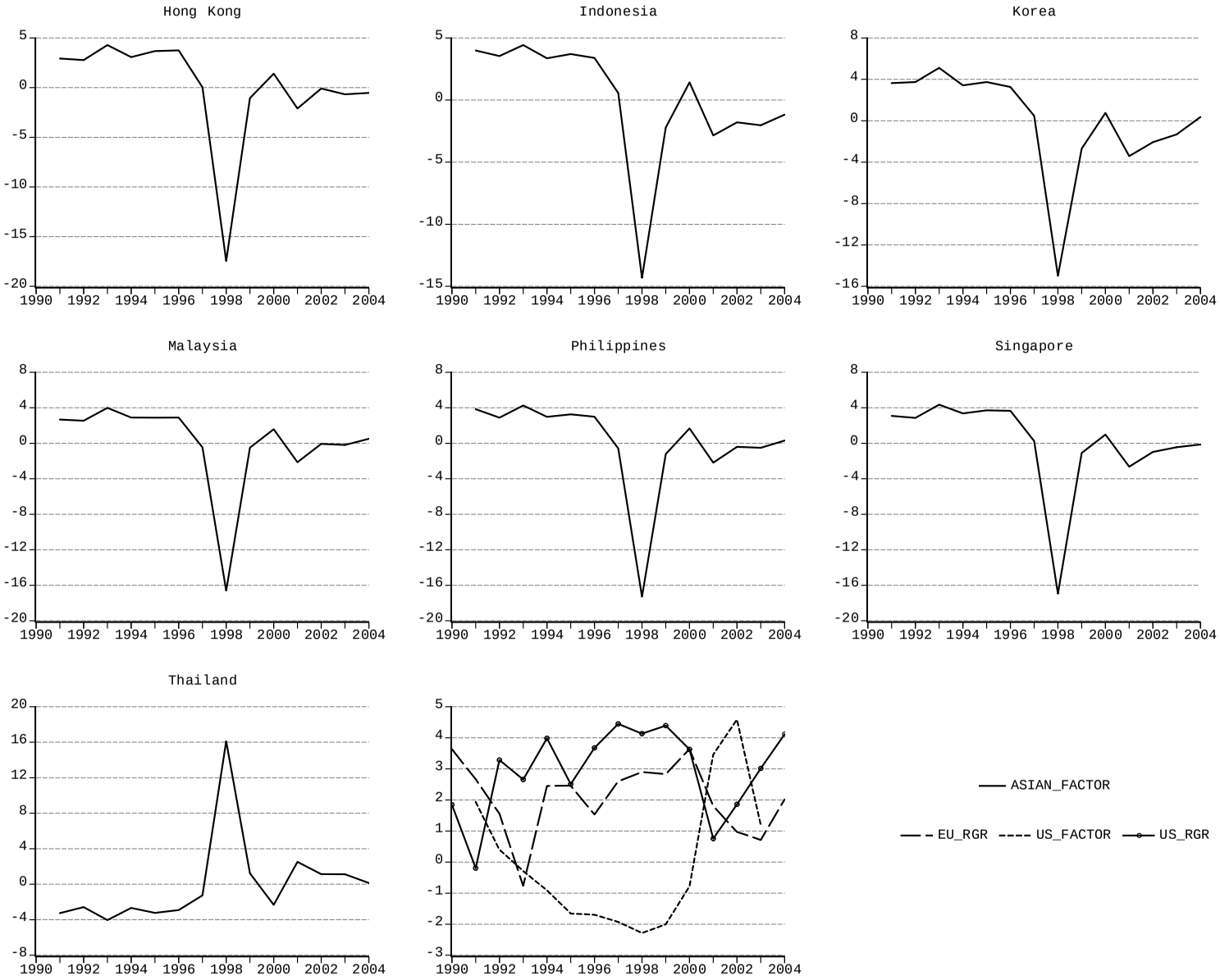

Figure 3: Factors and Growth